

Customer No.: 31561  
Application No.: 10/064,061  
Docket NO.: 8941-US-PA

a plurality of sequentially stacked wiring layers;

at least one insulation layers between two neighboring wiring layers so that the insulation layer and the wiring layer are alternately stacked on top of each other; and

at least one conductive plugs passing through the insulation layer for electrically connecting the wiring layers;

wherein the uppermost wiring layer further includes:

a plurality of core bump pads;

at least ~~one~~ two signal bump pad rings around the core bump pads;

at least one power bump pad rings around the core bump pads; and

at least one ground bump pad rings around the core bump pads, wherein one of said power bump pad ring and one of said ground bump pad ring are positioned between said two signal bump pad rings;

wherein the signal bump pad rings, the power bump pad rings and the ground bump pad rings are distributed concentrically; and

the bottommost wiring layer further includes:

a plurality of core ball pads;

at least one signal ball pad rings around the core ball pads;

at least one power ball pad rings around the core ball pads; and

at least one ground ball pad rings around the core ball pads;

wherein the signal ball pad rings, the power ball pad rings and the ground ball pad rings are distributed concentrically.

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2. (Original) The flip-chip package substrate of claim 1, wherein the core bump pads includes a plurality of core power bump pads and a plurality of core ground bump pads.

3. (Original) The flip-chip package substrate of claim 2, wherein the core power bump pads and the core ground bump pads are alternately positioned.

4. (Currently Amended) The flip-chip package substrate of claim 2, wherein the core power bump pads are grouped together to form at least one core power bump pad ring, the core ground bump pads are grouped together to form at least one core ground bump pad rings and both the core power bump pad rings, and the core ground bump pad rings are distributed concentrically.

5. (Original) The flip-chip package substrate of claim 1, wherein the core ball pads includes a plurality of core power ball pads and a plurality of core ground ball pads.

6. (Original) The flip-chip package substrate of claim 5, wherein the core power ball pads and the core ground ball pads are alternately positioned.

7. (Currently Amended) The flip-chip package substrate of claim 5, wherein the core power ball pads are grouped together to form at least one core power ball pad rings, the core ground ball pads are grouped together to form at least one core ground ball pad rings and both the core power ball pad rings, and the core ground ball pad rings are distributed concentrically.

8. (Currently Amended) The flip-chip package substrate of claim 1, wherein the signal bump pad rings encloses a plurality of bump pads over 50% of which are signal bump pads.